

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please amend the claims as follows:

Claim 1 (Currently Amended): A method of processing a packet in a gateway device connected to a plurality of communication paths providing connection with corresponding networks, said method comprising:

providing a search utility in said gateway, said search utility enabling the retrieval of both a forwarding information and a network address translation (NAT) information necessary for processing said packet in a single search operation, wherein said NAT information specifies a new address for an original address in said packet, said forwarding information specifying one of said plurality of communication paths to forward said packet, each of said plurality of communication paths being identified by a corresponding physical port;

receiving said packet containing said original address;

determining said forwarding information and said NAT information for said packet in a single search operation by using said search utility;

substituting said new address for said original address in said packet; and

forwarding said packet with said new address on the specified one of said plurality of communication paths in said forwarding information, wherein the providing comprises maintaining a single table for both the forwarding information and the NAT information such that the information can be retrieved in the single search operation, and wherein the table is stored in a content addressable memory (CAM) indexed by a source address and a destination address that are provided as a key in the CAM.

Claim 2 (Cancelled)

Claim 3 (Cancelled)

Claim 4 (Currently Amended): The method of ~~claim 3~~ Claim 1, wherein said CAM comprises a multi-way CAM.

Claim 5 (Currently Amended): The method of ~~claim 2~~ Claim 1, wherein said gateway device comprises a service selection gateway (SSG) connecting a plurality of remote systems to a plurality of service domains, wherein one of said original address and said new address comprises a local address of a remote system and the other address comprises an external address in a service domain for said remote system, said maintaining further comprises:

storing NAT information and forwarding information in a plurality of tables partitioned according to service domains such that forwarding information and NAT information related to the same service domain is stored in the same one of said plurality of tables.

Claim 6 (Previously Presented): The method of claim 5, wherein at least one of said plurality of tables stores NAT information and forwarding information related to at least a first service domain and a second service domain contained in said plurality of service domains, said first service domain and said second service domain respectively containing a first set of addresses and a second set of addresses accessible from said gateway device, wherein said first set of addresses and said second set of addresses do not overlap.

Claim 7 (Original): The method of claim 1, wherein said forwarding information comprises an interface on said gateway device, wherein said forwarding comprises sending said packet on said interface, wherein said packet is received in the form of an Internet Protocol (IP) packet.

Claim 8 (Currently Amended): A gateway device for processing a packet, said gateway device comprising:

interface means coupled to a plurality of communication paths, wherein each communication path provides connection with a corresponding network;

means for searching enabling the retrieval of both a forwarding information and a network address translation (NAT) information necessary for processing said packet in a single search operation, wherein said NAT information specifies a new address for an original address in said packet, and said forwarding information specifying one of said plurality of communication paths to forward said packet;

means for receiving said packet containing said original address;

means for determining said forwarding information and said NAT information for said packet by using said single search;

means for substituting said new address for said original address in said packet; and

means for forwarding said packet with said new address on the communication path specified in said forwarding information, wherein the means for providing comprises maintaining a single table for both the forwarding information and the NAT information such that the information can be retrieved in the single search operation, and wherein the table is stored in a content addressable memory (CAM) indexed by a source address and a destination address that are provided as a key in the CAM.

Claim 9 (Cancelled)

Claim 10 (Cancelled)

Claim 11 (Currently Amended) The gateway device of ~~claim 10~~ Claim 8, wherein said CAM comprises a multi-way CAM, said packet comprises an IP packet, and said forwarding information comprises an interface on said gateway device, wherein said means for forwarding sends said packet on said interface.

Claim 12 (Currently Amended): The gateway device of ~~claim 10~~ Claim 8, wherein said gateway device comprises a service selection gateway (SSG) connecting a plurality of remote systems to a plurality of service domains, wherein one of said original address and said new address comprises a local address of a remote system and the other address comprises an external address in a service domain for said remote system, said memory means stores NAT information and forwarding information in a plurality of tables partitioned according to service domains such that forwarding information and NAT information related to the same service domain is stored in the same one of said plurality of tables.

Claim 13 (Previously Presented): The gateway device of claim 12, wherein at least one of said plurality of tables stores NAT information and forwarding information related to at least a first service domain and a second service domain contained in said plurality of service domains, said first service domain and said second service domain respectively containing a first set of addresses and a second set of addresses accessible from said gateway device, wherein said first set of addresses and said second set of addresses do not overlap.

Claim 14 (Currently Amended): A computer readable medium storing one or more sequences of instructions for causing a gateway device to process a packet, said gateway device connected to a plurality of communication paths providing connection with corresponding networks, wherein execution of said one or more sequences of instructions by one or more processors contained in said gateway device causes said gateway device to perform the actions of:

providing a search utility in said gateway, said search utility enabling the retrieval of both a forwarding information and a network address translation (NAT) information necessary for processing said packet in a single search operation, wherein said NAT information specifies a new address for an original address in said packet and said forwarding information specifies one of said plurality of communication paths to forward said packet;

receiving said packet containing said original address;

determining said forwarding information and said NAT information for said packet in a single search operation by using said search utility;

substituting said new address for said original address in said packet; and

forwarding said packet with said new address on the communication path specified in said forwarding information, wherein the providing comprises maintaining a single table for both the forwarding information and the NAT information such that the information can be retrieved in the single search operation, and wherein the table is stored in a content addressable memory (CAM) indexed by a source address and a destination address that are provided as a key in the CAM.

Claim 15 (Cancelled)

Claim 16 (Cancelled)

Claim 17 (Currently Amended): The computer readable medium of ~~claim 16~~ **Claim 14**, wherein said CAM comprises a multi-way CAM and said packet is received in the form of an IP packet.

Claim 18 (Currently Amended): The computer readable medium of ~~claim 16~~ Claim 14, wherein said gateway device comprises a service selection gateway (SSG) connecting a plurality of remote systems to a plurality of service domains, wherein one of said original address and said new address comprises a local address of a remote system and the other address comprises an external address in a service domain for said remote system, said maintaining further comprises:

storing NAT information and forwarding information in a plurality of tables partitioned according to service domains such that forwarding information and NAT information related to the same service domain is stored in the same one of said plurality of tables.

Claim 19 (Previously Presented): The computer readable medium of claim 18, wherein at least one of said plurality of tables stores NAT information and forwarding information related to at least a first service domain and a second service domain contained in said plurality of service domains, said first service domain and said second service domain respectively containing a first set of addresses and a second set of addresses accessible from said gateway device, wherein said first set of addresses and said second set of addresses do not overlap.

Claim 20 (Currently Amended): A gateway device for processing a packet, said gateway device comprising:

- a plurality of ports, each of said plurality of ports being coupled to a corresponding one of a plurality of communication paths providing connection with a corresponding network;

- a memory unit storing a forwarding information and a network address translation (NAT) information necessary for processing said packet, wherein said NAT information specifies a new address for an original address in said packet, and said forwarding information specifying one of said plurality of communication paths to forward said packet;

- an inbound interface receiving said packet containing said original address;

- a forwarding and NAT block determining said forwarding information and said NAT information for said packet using a single search, said forwarding and NAT block substituting said new address for said original address in said packet; and

- an outbound interface forwarding said packet with said new address on the communication path specified in said forwarding information, wherein the providing comprises maintaining a single table for both the forwarding information and the NAT information such that the information can be retrieved in the single search operation, and wherein the table is stored in a content addressable memory (CAM) indexed by a source address and a destination address that are provided as a key in the CAM.

Claim 21 (Cancelled)

Claim 22 (Cancelled)

Claim 23 (Currently Amended): The gateway device of ~~claim 22~~ Claim 20, wherein said CAM comprises a multi-way CAM and said packet comprises an IP packet.

Claim 24 (Currently Amended): The gateway device of ~~claim 21~~ **Claim 20**, wherein said gateway device comprises a service selection gateway (SSG) connecting a plurality of remote systems to a plurality of service domains, wherein one of said original address and said new address comprises a local address of a remote system and the other address comprises an external address in a service domain for said remote system, wherein said memory unit stores NAT information and forwarding information in a plurality of tables partitioned according to service domains such that forwarding information and NAT information related to the same service domain is stored in the same one of said plurality of tables.

Claim 25 (Previously Presented): The gateway device of claim 24, wherein at least one of said plurality of tables stores NAT information and forwarding information related to at least a first service domain and a second service domain contained in said plurality of service domains, said first service domain and said second service domain respectively containing a first set of addresses and a second set of addresses accessible from said gateway device, wherein said first set of addresses and said second set of addresses do not overlap.

Claim 26 (Original): The gateway device of claim 25, further comprising a service selection block determining a specific service to which said packet relates to and causes said packet to be processed according to a corresponding one of said plurality of tables.

Claim 27 (Previously Presented): The gateway device of claim 26, further comprising a plurality of forwarding and NAT blocks wherein each of said plurality of forwarding and NAT blocks is coupled to a corresponding one of a plurality of memory units, wherein each of said plurality of memory units stores one of said plurality of tables.



Claim 28 (Currently Amended): The method of ~~claim 3~~ Claim 1, wherein said determining further comprises providing ~~a~~ an input port number also as said key and retrieving a new port number in addition to said forwarding information and said NAT information, wherein said input port number and said new port number identify a session at a transport protocol level.